650V Silicon Carbide Schottky Diode

DESCRIPTION：

- High surge current capability
- No reverse recover
- High Speed Switching
- Positive temperature Coefficient
- Easy to paralleling
- RoHS Compliant

V_{RRM}	650V
I_F	20A (TC=148℃)
Q_C	62nC

TYPICAL APPLICATIONS：

- Switch mode power supplies
- Solar inverters
- Data Center
- Power factor correction

TO-247AC

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	650	V
Continuous Forward Current	Tc=25℃ Tc=135℃ Tc=148℃	I_F	54 25 20	A
Non-Repetitive Forward Surge Current	Tc=25℃, t_P=10ms, Half sine pulse Tc=110℃, t_P=10ms, Half sine pulse	I_{FSM}	170 154	A
Repetitive Peak Forward Surge Current	Tc=25℃, t_P=10ms, Half sine pulse	I_{FRM}	159	A
i^2t value	Tc=25℃, t_P=10ms Tc=110℃, t_P=10ms	$\int i^2dt$	144 118	A^2S
Power dissipation	Tc=25℃ Tc=110℃ Tc=150℃	P_{tot}	204 88 34	W
Operation Junction temperature		Tj	-55~+175	℃
Storage temperature		T_{STG}	-55~+175	℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction - case		$R_{th(j-C)}$	0.735	℃/W

ELECTRICAL CHARATERISTICS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	V_{DC}	650			V
Forward Voltage IF = 10A IF = 20A, Tc =25℃ IF = 20A, Tc =175℃	V_F		1.16 1.35 1.70	1.6	V
Reverse Current VR = 650V, Tc =25℃ VR = 650V, Tc =175℃	I_R		6 15	100	uA
Total Capacitive Charge VR = 400V	Q_C		62		nC
Total capacitance VR = 1V, f =1MHz VR = 200V, f =1MHz VR = 400V, f =1MHz	C		906 122 118		pF
Capacitance Stored Energy VR = 400 V	Ec		10		uJ

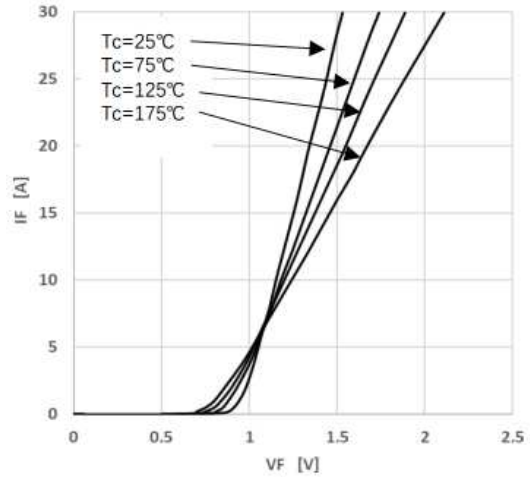


Figure 1. Forward characteristics

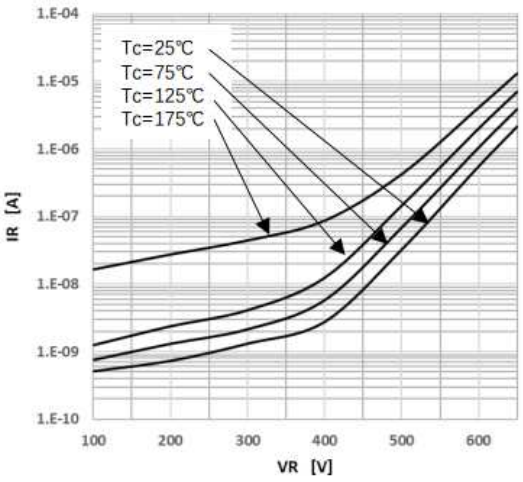


Figure 2. Reverse characteristics

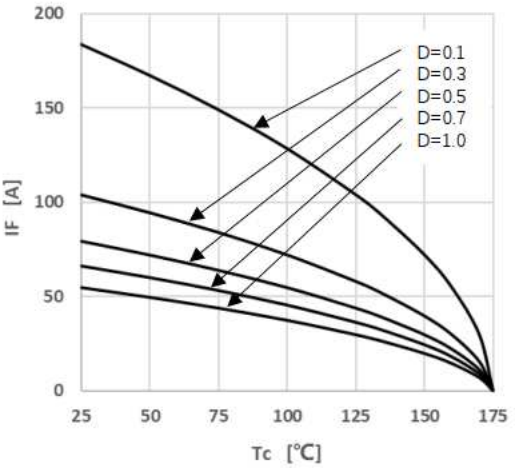


Figure 3. Peak Forward Current Derating

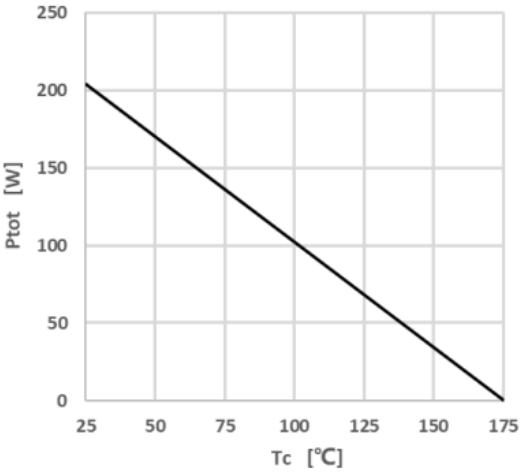


Figure 4. Power Dissipation

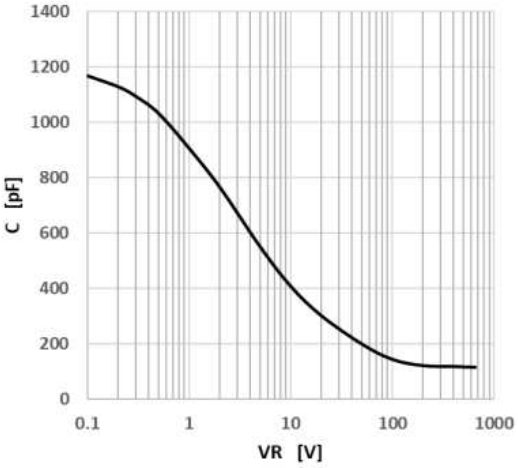


Figure 5. Capacitance vs. Reverse Voltage

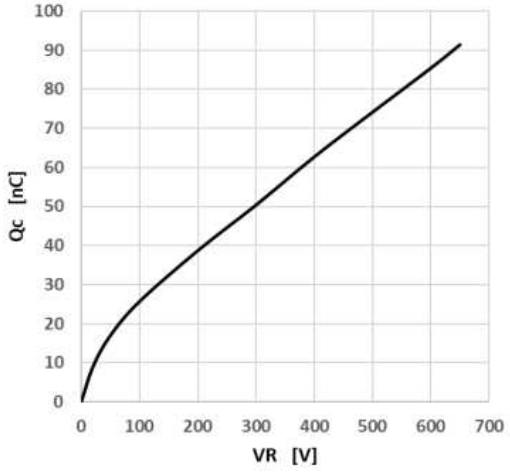


Figure 6. Capacitance Charge vs. Reverse Voltage

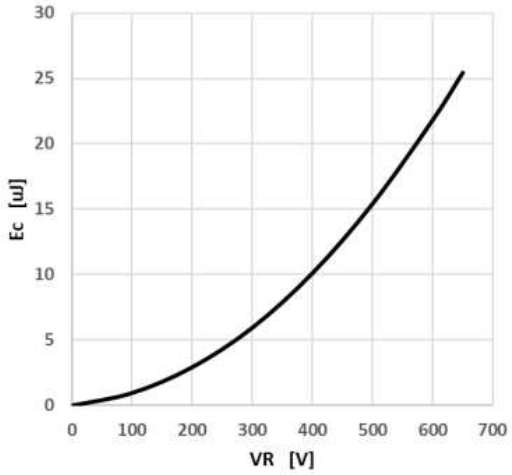


Figure 7. Capacitance Stored Energy

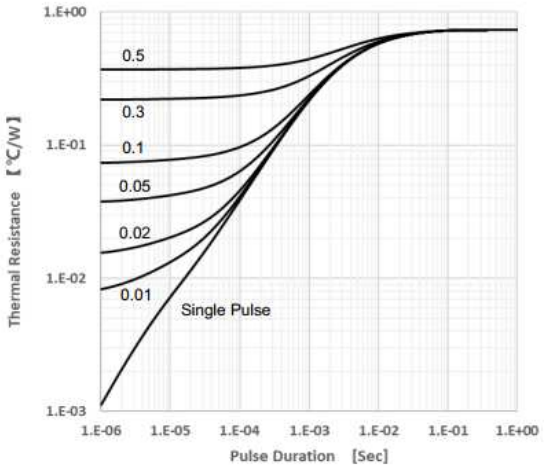
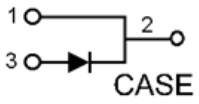
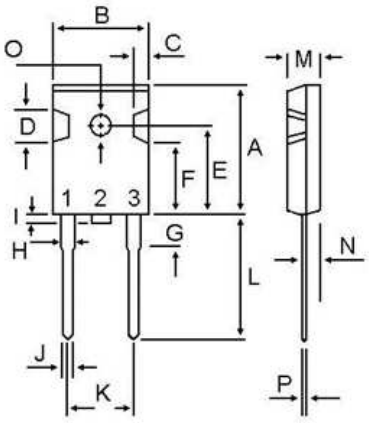


Figure 8. Transient Thermal Impedance

• Circuit diagram



• TO-247AC Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	20.63	22.38
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.81	15.22
F	11.72	12.84
G	3.75	4.35
H	1.82	2.46
I	---	1.25
J	0.89	1.53
K	10.52	11.32
L	18.50	21.50
M	4.68	5.36
N	2.40	2.80
O	3.25	3.65
P	0.55	0.70

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